ATTACHMENT E

DATA QUALITY OBJECTIVE

Appendix E
Data Quality Objective – Soil Sampling
Amarillo Phosphine
Amarillo, Potter County, Texas

STEP 1. STATE THE PROBLEM	
The presence of Phosphine has been detected in air monitoring efforts. Air samples will be collected from locations established at the site to determine if the site-specific constituent of concern (COC) is above EPA Regional Screening Levels (RSLs) and/or OSHA Permissible Exposure Limit (PEL) values.	
STEP 2. IDENTIFY THE DECISION	
Are the concentrations of constituents of concern in air, represented by a sample, above specified action levels?	
IDENTIFY THE ALTERNATIVE ACTIONS THAT MAY BE TAKEN BASED ON THE DECISIONS.	▪ If the site-specific COCs in air exceed the EPA RSLs and/or OSHA PEL, the air represented by that sample will require additional attention and be addressed by the EPA OSC. ▪ If no site-specific COCs exceed EPA RSLs and/or OSHA PEL, the air represented by that sample will not require additional attention.
STEP 3. IDENTIFY INPUTS TO THE DECISION	
IDENTIFY THE INFORMATIONAL INPUTS NEEDED TO RESOLVE A DECISION.	▪ Contaminant concentrations in air samples collected from the impacted area.
IDENTIFY THE SOURCES FOR EACH INFORMATIONAL INPUT AND LIST THE INPUTS THAT ARE OBTAINED THROUGH ENVIRONMENTAL MEASUREMENTS.	▪ Air sample locations identified in Section 3.2.1. ▪ OSHA Method 1003.
BASIS FOR THE CONTAMINANT SPECIFIC ACTION LEVELS.	EPA RSLs and OSHA PEL as noted in Appendix F of the Quality Assurance Sampling Plan (QASP).
IDENTIFY POTENTIAL SAMPLING TECHNIQUES AND APPROPRIATE ANALYTICAL METHODS.	▪ Air sampling techniques are described in Section 3.2.1 of the QASP. ▪ OSHA Method 1003.
STEP 4. DEFINE THE BOUNDARIES OF THE STUDY	
DEFINE THE DOMAIN OR GEOGRAPHIC AREA WITHIN WHICH ALL DECISIONS MUST APPLY.	The rooms in the mobile home as illustrated in Figure 3-1 of the QASP.
SPECIFY THE CHARACTERISTICS THAT DEFINE THE POPULATION OF INTEREST.	Constituent concentrations of air samples collected within the on-site residential home.
DEFINE THE SCALE OF DECISION MAKING.	The scale of decision making will be represented by each sample collected from the site.
DETERMINE THE TIME FRAME TO WHICH THE DATA APPLY.	The data will apply until the room (or area) represented by the air sample receives appropriate response actions.
DETERMINE WHEN TO COLLECT DATA.	Samples will be collected under the direction of the EPA OSC.
IDENTIFY PRACTICAL CONSTRAINTS ON DATA COLLECTION.	▪ Inclement weather. ▪ Access not attainable.
STEP 5. DEVELOP A DECISION RULE	

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Lane Plating Removal Assessment Phase II, Inc.
Dallas, Dallas County, Texas

SPECIFY THE PARAMETER THAT CHARACTERIZES THE POPULATION OF INTEREST.	The sample concentrations at each sample location will be compared to EPA RSLs and OSHA PEL values.
SPECIFY THE ACTION LEVEL FOR THE DECISION.	Above screening levels as found in EPA RSLs and OSHA PEL.
DEVELOP A DECISION RULE.	If any result in an air sample is equal to or above the constituent-specific screening level, then the room (or area) represented by that sample will require additional attention. If any result in an air sample is below the constituent-specific screening level, then the room does not require additional attention.
STEP 6. SPECIFY LIMITS ON DECISION ERRORS	
DETERMINE THE POSSIBLE RANGE OF THE PARAMETER OF INTEREST.	Constituent concentrations may range from 0.0 ppm to more than the constituent specific screening level.
DEFINE BOTH TYPES OF DECISION ERRORS AND IDENTIFY THE POTENTIAL CONSEQUENCES OF EACH.	Type I Error: Deciding that the specified area represented by the air sample does not exceed the specified screening level when, in truth, the air concentration of the constituent exceeds its specified screening level. The consequence of this decision error is that the constituent of concern will remain on-site, possibly, endangering human health and the environment. This decision error is more severe. Type II Error: Deciding that the specified area represented by the air sample does exceed the specified screening level when, in truth, it does not. The consequences of this decision error are that remediation of the specified area will continue and unnecessary costs will be incurred.
ESTABLISH THE TRUE STATE OF NATURE FOR EACH DECISION RULE.	The true state of nature when the sample is decided to be below the specified screening levels when in fact, it is not below the specified screening levels, is that the area may need remedial action. The true state of nature when the sample is decided to be above the specified screening levels when in fact, it is not above the specified screening levels, is that the area may not need remedial action.
DEFINE THE TRUE STATE OF NATURE FOR THE MORE SEVERE DECISION ERROR AS THE BASELINE CONDITION OR THE NULL HYPOTHESIS (H_o) AND DEFINE THE TRUE STATE FOR THE LESS SEVERE DECISION ERROR AS THE ALTERNATIVE HYPOTHESIS (H_a).	H_o: The room (or area) represented by the air sample of the specified area is above the specified screening level. H_a: The room (area) represented by the air sample of the specified area is below the specified screening level.
ASSIGN THE TERMS "FALSE POSITIVE" AND "FALSE NEGATIVE" TO THE PROPER DECISION ERRORS.	▪ False Positive Error = Type I ▪ False Negative Error = Type II

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ASSIGN PROBABILITY VALUES TO POINTS ABOVE AND BELOW THE ACTION LEVEL THAT REFLECT THE ACCEPTABLE PROBABILITY FOR THE OCCURRENCES OF DECISION ERRORS.	To be assigned based on discussions with EPA OSC.
STEP 7. OPTIMIZE THE DESIGN	
REVIEW THE DQOs	Due to insufficient historical data, determination of the standard deviation was not possible. Therefore, sample size calculation using the traditional statistical formula may not be the optimal design. In order to select the optimal sampling program that satisfies the DQOs and is the most resource effective, other elements were considered.
DEVELOP GENERAL SAMPLING AND ANALYSIS DESIGN. The EPA Team developed a sampling strategy consisting of utilizing a GilAir Plus Personal Air Sampling Pump to collect air samples from approximately 12 inches from the floor and as close to floor vents as possible. Each sample will consist of a sample collected for 240 minutes at 1.0 liters per minute and as directed by EPA. All samples will be collected in the appropriate preloaded coated filter and submitted to a commercial approved laboratory for phosphine analysis. Air samples will be analyzed for OSHA Method 1003 to determine if site-specific constituents of concern (COCs) are present at concentrations above EPA Regional Screening Levels (RSLs) and/or OSHA Permissible Exposure Level (PEL).	